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Planning for Disaster Debris Management

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Preparing for Disaster Debris Management

- Prepare a Debris Management Plan
- Prepare and award a “Pre Event” Contract for disaster debris management

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Debris Management Plan

- Volume Estimating –
  - "How much debris do we plan for?"
- Disposal/Reduction Opportunities –
  - "How do we dispose of the debris?"
- Managing the Operations –
  - "How do we manage the operations?"
- Contracts –
  - "What kinds of contracts do we use?"

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Volume Estimating

- Pre-Disaster Planning
- Estimating Pre-Strike Disaster Impacts
- Post-Strike Estimating

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Volume Estimating: Pre-Disaster Plan

- How much debris can the Public Works Dept. manage?
- How much debris will we be able to manage using a pre-disaster debris contract?
- At what volume point are we overwhelmed and unable to manage the debris?

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Volume Estimating: Pre-Disaster Plan

- At various volume scenarios, what are our capabilities to dispose of the debris?
- At various volume scenarios, where can we pre designate Temp. Debris Storage & Reduction sites of adequate size and efficient dispersion?

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Volume Estimating: Pre-Strike Disaster Impacts

- Estimate of debris volume, type and dispersion
- “Target Specific” planning
- USACE web site provides formula to estimate:
  - Possible debris volumes
  - Needs for water and ice commodities
  - Number of households within hurricane force winds
  - Temporary housing needs
- GIS-based model predictions for storm impacts:
  http://www.englink.usace.army.mil

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Volume Estimating – Post Strike Estimating

- Difficult due to number of factors:
  - Type of debris
  - Magnitude of disaster
  - Geographical location

- Post-Strike estimating tools:
  Available at:
  http://www.englink.usace.army.mil

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Disposal/Reduction Opportunities

- Environmental Issues
- Burning
- Chipping and Grinding

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Disposal/Reduction Opportunities

- Recycling Opportunities
- Planning Considerations for DD Sites and TDSR Sites
- Design considerations for DD Sites and TDSR Sites
- Whenever possible handle debris only once. Pick up at curbside and transport to final disposal site.

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Environmental Issues

- Air Quality
- Water Quality
- Soil/Ash
- Diseases and Hazards
- Congestion and Noise
- Hazardous and Toxic Waste
- Historical and Cultural Resources
- Wetlands
- Endangered Species

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Burning / Incineration

- Open Burning
  - Clean, woody debris
  - Rural areas
  - Ash – soil additive
- Air Curtain Pit Incineration
  - Substantial volume reduction
  - Reduced environmental concerns

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Burning / Incineration

- Portable Air Curtain Incinerators
  - Pre-manufactured pit

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Chipping and Grinding

- Vegetative debris reduction differences
  - Burning – 95%
  - Chipping/Grinding – 75%
- Remaining volume must have benefit or use
  - Recycling wood chips for mulch
  - Recycling wood chips for boiler fuel
- Supports environmental concerns

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Recycling Opportunities

- Beneficial reuse of disaster debris
- Materials
  - Metals
  - Wood
  - Soil
  - Construction Materials
- Feasibility of Recycling is determined by the available markets

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Planning Considerations

- 100 acres of Temp. Debris Storage & Reduction capacity for each 1 million cu. Yd. of debris
- Use available public lands
- Sufficient time, cost, and site restoration requirements for leased land
- Baseline and post-use environmental testing
- Central location
- Environmental concerns
- Separation of site from other developments

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Design Considerations for TDSR Sites

- Inspection Towers location
- Traffic lanes at Inspection Tower site location
- Portable toilet facilities
- Site Traffic Flow – orderly movement of vehicles
- Access to fire safety and rescue equipment
- Safety Zone of at least 200 feet
- ACI Safety Zone
- Ash storage pit
- Open burning safety zone

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Design Considerations

- Compacted crushed rock access road surface
- Household Hazardous Waste area
- Sufficient area for chip piles
- C&D debris disposal area
- Adequate area for truck maneuverability and level dump area
- Consider prevailing winds
- Separate areas for public use of dumping vegetative and C&D debris

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Managing the Operations

- Sectoring
- Staffing
  - Monitoring contract performance
  - Roles and Responsibilities
- Accounting Processes
- Safety

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Managing the Operations - Sectoring

- Area subdivided into manageable units
  - Total estimated volume
  - Contractors plan for subcontracting
  - Political considerations
  - Urgency of need
- Sector boundary delineators
- Visually displayed in layers
- Tracking progress

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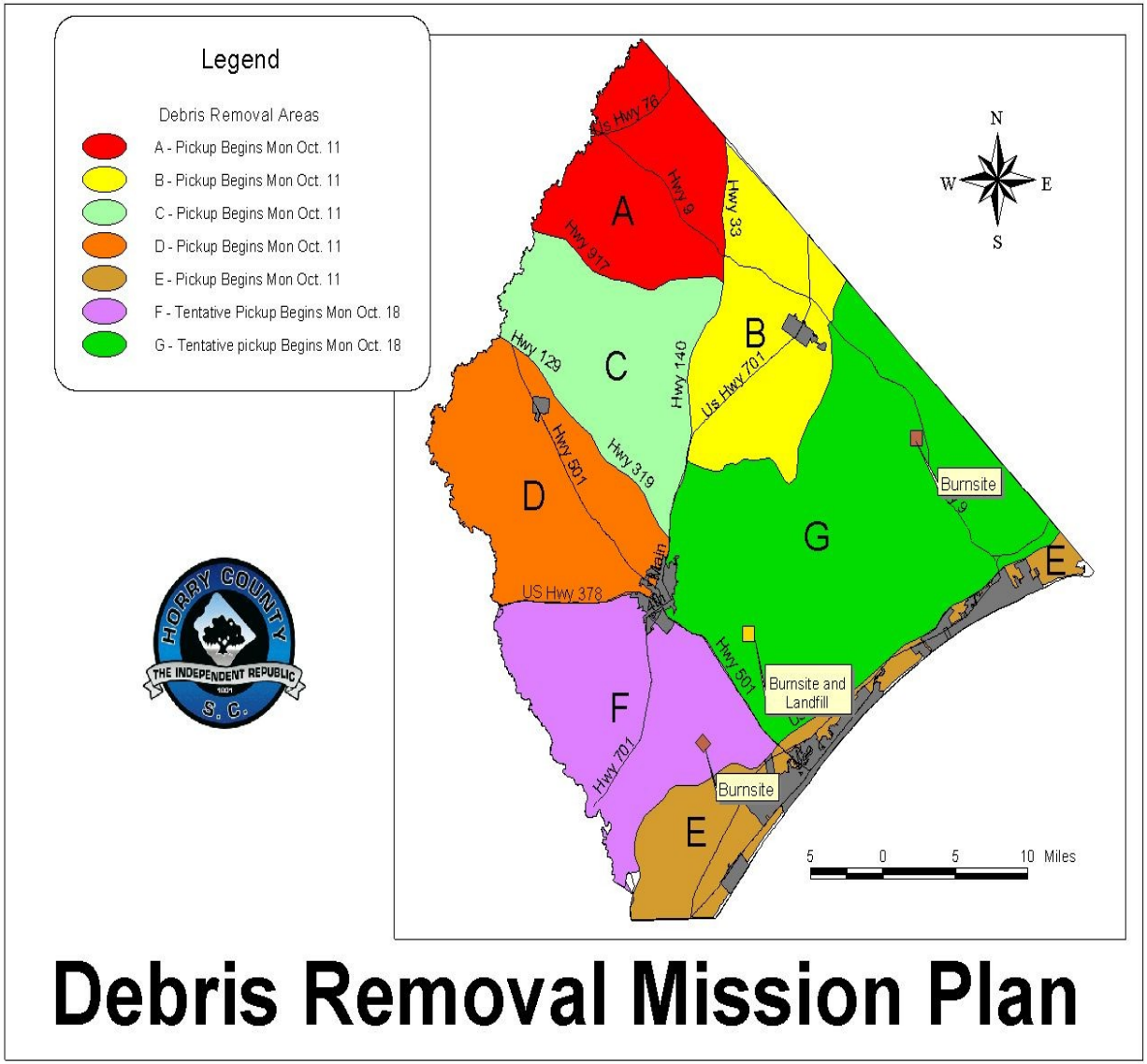

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Managing the Operations - Staffing

- Structure of Field Office
- Monitoring contractor performance
- Chapter 3, FEMA Publication 325, Debris Management Guide

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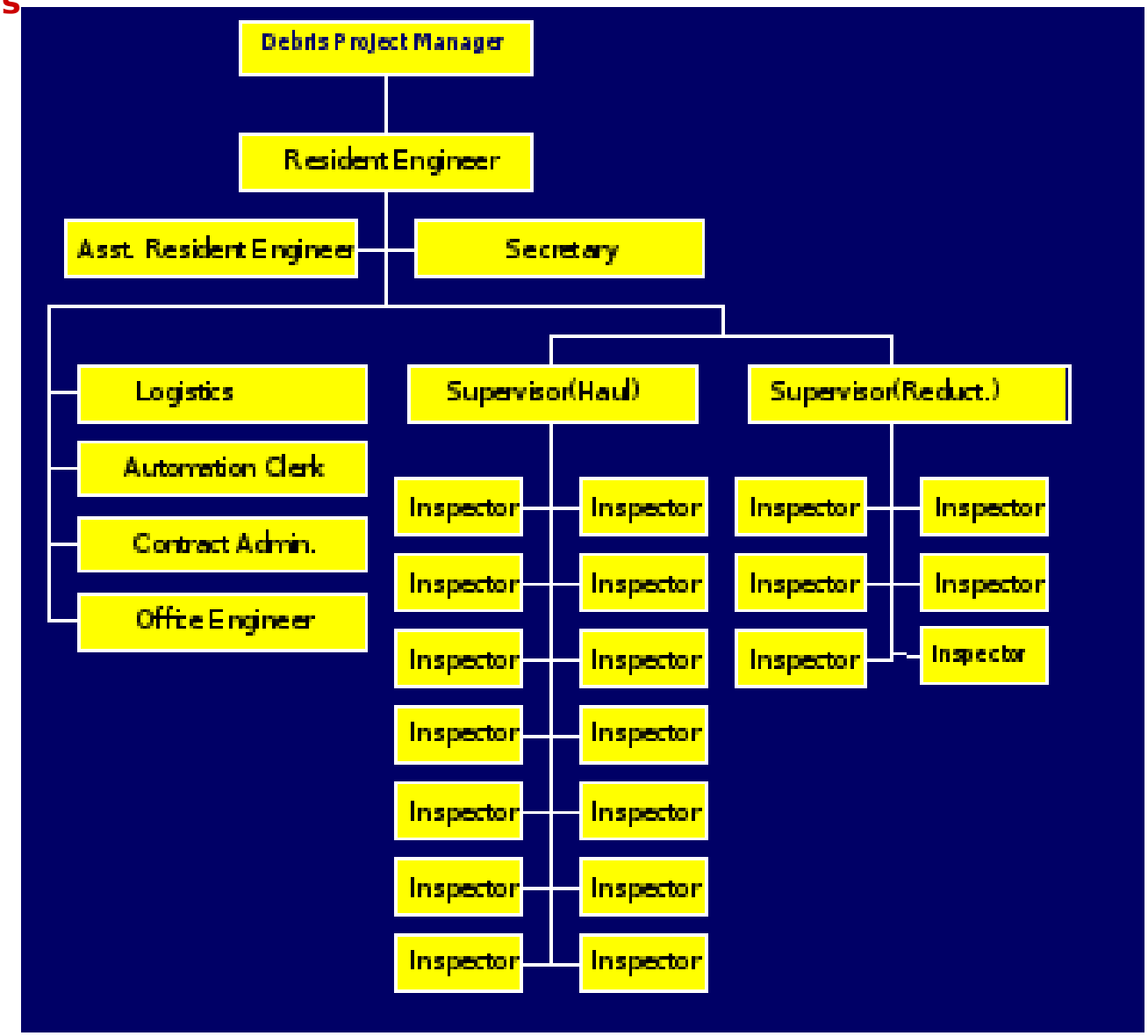
Field Office



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Managing the Operations – Accounting Processes

- Load Ticket process
  - Don’t Start without a production accounting process
  - Reconcile records frequently
- Electronic Load ticketing and data management
  - GIS, GPS

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Managing the Operations - Safety

- Isolated environment
- Heavy, loud equipment
- Extreme weather conditions
- Exposure to hazardous organisms
- Hazardous materials: glass, nails, etc.

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Contracts

- Unit Price Contract
- Time and Material Contracts
- Lump Sum Contract

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Unit Price Contracts

- Construction units and prices → line item costs and total contract costs

- Should be used:
  - Scope of work difficult to define
  - Work based on estimated quantities

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Time and Material Contracts

- Limited to maximum of 70 hours clearance work
- Should be used:
  - ONLY after all available local and state government equipment is committed

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Lump Sum Contract

- Establishes total contract price by one-item bid from contractor
- Price for work fixed unless scope of work changes
- Disadvantage: scope of work not well defined
- Should be used:
  - Scope of work clearly defined
  - Areas of work specifically quantified

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The “Pre-Event” Contract

- Competition
- No need to “fast track”
- Effective and efficient response
- Reduces time and costs

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All information in this presentation along with examples and illustrations can be found at:

http://www.englink.usace.army.mil

tab – “Debris Management”